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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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COUNTRY	USSR (Moscow Oblast)	REPORT	
SUBJECT	Instruction of Agrochemistry Students at the Timiryazev Agricultural Academy, Moscow, in the use of Radioactive Isotopes	DATE DISTR.	5 June 1955
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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

1. Instruction in the use of radioactive isotopes in plant investigation is given to all students in agrochemistry at the Timiryazev Agricultural Academy of Moscow University. Practical work on this topic is carried out by the students using radioactive phosphorus, P^{32}, and Geiger counters. In their practical work, students follow the working instructions published by the USSR Academy of Sciences and written by Sokolov (fnu) and Serdobolskiy (fnu).

2. The following are extracts from the working instructions:

"...when 1 gm of P_2O_5 (isotope mixture) has an activity of .1 μ Curie, it contains 1.5×10^{-7} mgm P^{32}. Because of this high activity, amounts from 10^{-14} to 10^{-17} gms can be estimated....

"It is necessary to dilute as quickly as possible the solution obtained with the radioactive element, in order that the self-adsorption shall be increased to the point where no damage or injury from radioactivity may be done to the plants.....

"The dose (of radioactive material) must be so determined that it ensures accurate results but is less than a harmful dose. It has been determined that P^{32} (with a half-life of 14.3 days) in doses of 5-10 μ Curies in a receptacle gives accurate results in short-time experiments. For experiments on vegetation carried out to maturity, amounts up to 100-200 μ Curies are required. Care must be taken to ensure that the radioactive radiation from the preparation is at least three times as strong as that of the surroundings, as otherwise no accurate results can be obtained.

"Harmful doses on 1 kg of earth are:

500 μ Curies of P^{32} for crops

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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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360 μ Curies of P^{32} for wheat

1000 μ Curies for peas. (Flax and mustard are not harmed by this dose.)

"If P^{32} is not mixed with the soil, smaller amounts should be used. The higher the adsorption factor of the soil, the higher is the harmful dose. At the same time, the addition of non-radioactive phosphorus reduces the toxicity of P^{32}."

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Comment: plant investigations using radioactive isotopes have, for some time, played a definite part in the educational program of all agrochemistry students at the Academy. It seems likely that these techniques were introduced into the syllabus after July 1954.

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